Review

by Prof. Marieta Ivanova Kostianeva, MD, PhD,
based on Order No. P-109-170/28.04.2026

Regarding: the dissertation and abstract of Dr. Maria Stoeva Stoeva - Milanova on the topic **"Myopia Control"**, with supervisor: Corresp. Member Prof. Hristina Grupcheva, MD, PhD, DSc, FEBO, FICO(Hon), FBCLA, FIACLE, for the awarding of the educational and scientific degree "Doctor" (PhD) in the scientific specialty "Ophthalmology".

Biographical Data

During the period 1997–2002, Dr. Maria Stoeva studied medicine at the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna. She acquired a specialty in Ophthalmology in 2016. Since 2017, she has been successively a part-time assistant and a lecturer (since 2018) in the Department of Optometry and Occupational Diseases at MU "Prof. Dr. Paraskev Stoyanov" – Varna. In 2019, she was enrolled as a full-time PhD student at MU-Varna. From 2019 to the present, she has been working as an ophthalmologist at the University Specialized Hospital for Active Treatment of Eye Diseases - Varna (USBABAL).

General Characteristics of the Dissertation

The structure of the presented dissertation complies with modern standards for the preparation of such work. The dissertation contains 225 pages. 34 tables and 49 figures are used for its illustration. The bibliographic reference covers 256 literary sources, of which 4 are in Cyrillic and 252 in Latin.
After the introduction (3 pages), the dissertation includes the following main sections: Literature Review (79 pages); Aims and Purposes (1 page); Methodology (16 pages); Results (40 pages); Discussion (42 pages); Conclusions (2 pages); Conclusion; Contributions; Appendices; Publications related to the dissertation; Bibliography.

Relevance and Significance of the Dissertation Topic

The dissertation presented by Dr. Maria Stoeva is dedicated to myopia (nearsightedness) and its control. The high global prevalence of myopia, its significant impact on quality of life, and the risk of pathological complications define it as a socially significant and topical issue. It is estimated that the incidence of myopia will continue to increase globally, affecting 5 billion people by 2050, leading to a so-called myopic pandemic. The onset of myopia at an earlier age is an alarming aspect of its epidemiology and represents a significant risk factor for its progression to high myopia.

High myopia (-5 or more diopters) is associated with an increased risk of vision impairment and loss due to degenerative changes in the macula, optic nerve, and peripheral retina, retinal detachment, myopic choroidal neovascularization, glaucoma, and cataracts. The control of this ametropia is the subject of extensive research and has become a clinical focus. Methods for myopia control have increased in recent years. Various options have been developed to slow its progression – low-concentration atropine (0.01%; 0.05%), orthokeratological using Ortho-K lenses, the use of progressive, bi- and multifocal glasses and soft multifocal contact lenses, glasses or contact lenses with defocus design, and encouraging outdoor activities for children. Studies in Bulgaria show that a large portion of children do not undergo the recommended ophthalmological examinations, and there is a lack of effective state policy for the timely detection of children with vision problems. All of the above determines the relevance and significance of the dissertation topic.
The literature review is voluminous and comprehensive, spanning 79 pages (35% of the dissertation). It performs a detailed study of literary sources. The literature review is written intelligently, competently, and with a good understanding of the problem. It reflects the theories on the onset of myopia. The classification, epidemiology, and diagnosis are reviewed. The risks and complications of myopia are described. Optical and surgical means for myopia correction are mentioned. Myopia control methods are reviewed, as well as new trends in control methods.

Aims and Purposes of the Dissertation

The aim and the purposes of the dissertation are correctly and clearly formulated.
The main aim of the dissertation is: "...study and analysis of demographic characteristics and the degree of myopia, as well as an assessment of the clinical efficacy of the applied methods for nearsightedness control for a period of 5 years in patients aged between 6 and 16 from the city of Varna, who underwent follow-up at USBABAL-Varna."
To achieve this goal, Dr. M. Stoeva has set 6 main purposes.

Methodology

In the "Methodology" section, Dr. M. Stoeva has selected the unit of observation and the criteria for selecting the subjects for the study. A total of 92 patients who underwent follow-up at USBABAL – Varna for a period of 5 years were examined in the study. The criteria for participant selection are defined: patients aged between 6 and 16 from the city of Varna with myopia and refractive error $\leq$ -2.00D, cylindrical refraction not more than 1.00D, and anisometropia not more than 1.50D. The parents/guardians of the included children signed an informed consent form.
The study was conducted for a 5-year period from 01.09.2020 to 01.09.2025. The focus of the dissertation work and its respective significance lies in the long-term follow-up of myopic patients.

The clinical methods used are autorefractometry with cycloplegia and additional skiascopy with a Heine Beta® 200 Retinoscope, determination of the best-corrected visual acuity using a Huvitz HCP-7000 optotype projector (153), and determination of subjective signs based on a questionnaire. Optical biometry using the ZEISS IOLMaster 700 with SWEPT Source Biometry® and corneal topography with a Pentacam® corneal topographer, Oculus (OCULUS, Optikgeräte GmbH) were performed. Regarding the applied therapeutic methods, patients were divided into four randomized groups: Group I – Atropine drops 0.01%, in combination with monofocal glasses; Group II – Multifocal contact lenses - Add +1.50D; Group III – Ortho-K lenses (DRL®, CMI); Group IV – Monofocal glasses – Control group.

Results

The obtained results are orderly presented and very well illustrated with tables and figures (21 tables and 31 figures). Their presentation follows the set objectives. The statistical methods used are accurately and correctly applied to draw the necessary conclusions. The results obtained are the product of original research. The mastery of methods for diagnosing and monitoring myopia, as well as the therapeutic approaches to prevent its progression, are the strong positive aspects of the dissertation.

Discussion

In the "Discussion", Dr. Stoeva, using her literary knowledge in an expanded form, discusses and summarizes the data obtained in the study.

The 7 conclusions are related to each other and reflect the performed research:

- Myopia control requires a personalized approach.
- Myopia progression correlates with the patient's age, the onset of nearsightedness, and its severity.
- Risk factors for myopia progression emerge as female gender (OR 1.83), both parents being myopic (OR 2.57), annual progression in SE $\leq$ -1.00D (OR 3.43), early age of onset $\leq$ 13 years (OR 4.19), and absolute value of SE $\leq$ -6.00D (OR 6.43).
- After 2 years of follow-up, a trend towards greater myopization and greater axial elongation is observed in all age groups.
- Ortho-K lenses are the most effective for controlling axial progression, followed by atropine drops and MCL (multifocal contact lenses).
- Pain, blurred vision, and headache have the strongest influence on visual function and normal perception of the participants.
- The best results regarding quality of life were reported by the group of patients corrected with multifocal and Ortho-K lenses.

The contributions of the dissertation are of a cognitive and applied-practical nature: For the first time in Bulgaria, an assessment of subjective signs and quality of life in children and adolescents with myopia has been made. Questionnaires for assessing the quality of life were developed. The advantages of myopia control through Ortho-K lenses were established. A risk profile for myopia progression in children and adolescents with nearsightedness from the city of Varna was created.

In reference to her dissertation, Dr. Maria Stoeva presented 2 publications in which she is the first author. The abstract presents the most essential parts of the dissertation in a concise form.

Conclusion

Dr. M. Stoeva's dissertation is focused on the possibilities of modern medicine for careful observation and early intervention in myopic progression. All approaches to myopia control play an important role in reducing overall morbidity. Atropine drops and orthokeratological lenses stand out from other available approaches with high efficacy and slow down axial progression. The long and complex path of the clinician toward successful myopia control passes through the study and follow-up of individuals clinically, subjectively, and in the sphere of quality of life.

My assessment of the dissertation presented by Dr. M. Stoeva on the topic "Myopia Control" is positive, with the following arguments:

1. Actuality and significance of the topic.
2. Use of modern methods for diagnosis and monitoring of myopia, as well as mastery of modern therapeutic approaches regarding its progression.
3. Long period of follow-up of the examined children and results obtained as the personal work of the doctorand.

I hope that Dr. Stoeva will continue to develop in future as a specialist and researcher in the field of pediatric eye health.

With this review, I express my conviction that the work meets the accepted requirements for the awarding of the educational and scientific degree "Doctor" (PhD) in the Law on the Development of the Academic Staff in the Republic of Bulgaria.

I recommend that the members of the honorable Scientific Jury vote positively for the awarding of the educational and scientific degree "DOCTOR" in Ophthalmology to Dr. Maria Stoeva.

29.05.2026 **Prof. M. Konareva-Kostianeva, MD, PhD**